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Pholidichthys anguilliformis Lockington, 1881 (Teleostei: Pholidae), a junior synonym of *Pholis ornata* (Girard, 1854)

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Abstract.—The identity of *Pholidichthys anguilliformis* Lockington, 1881, has been unclear since its original description and subsequent loss of the holotype and only known specimen. We consider it conspecific with *Gunnellus ornatus* Girard, 1854 (= *Pholis ornata* [Girard]) and designate the holotype of *G. ornatus* as neotype of *P. anguilliformis,* thereby making the latter name a junior objective synonym of the former.

Pholidichthys anguilliformis was described by Lockington (1881:119) from "a single specimen dredged off San Jose Island, Amortiguado Bay, Gulf of California" in 1876 by the schooner *Harvest Queen.* Lockington gave no reasons for assigning his species to *Pholidichthys,* and his only comments comparing the new form to the then only described species of the genus, *Pholidichthys leucotaenia* Bleeker, are that his new species has a much more slender body and lacks the longitudinal bluish white band of *P. leucotaenia.* Springer and Freihofer (1976) and Springer and Larson (1996) excluded *P. anguilliformis* from *Pholidichthys* based primarily on Lockington's statement that the dorsal fin comprises only spines, whereas this fin in both of the other known species of *Pholidichthys* (*P. leucotaenia,* tropical western Pacific, not including Australia; *P. anguis,* northwestern Australia) has only segmented rays. Neither Springer and Freihofer nor Springer and Larson proposed an identity for Lockington's fish, and no other specimens of his nominal species have been reported, leaving its identity and the status of the name unresolved (Eschmeyer 1997).

Lockington did not indicate where he deposited the holotype of *P. anguilliformis,* but H. W. Fowler (1878–1965), former curator at the Academy of Natural Sciences of Philadelphia, apparently cataloged it as ANSP 10843. The species does not appear in a catalog of type specimens in the Academy of Natural Sciences of Philadelphia (Böhlke 1984), and the holotype has not been found in subsequent searches (E. B. Böhlke, *in litt.,* 3 Dec 1998). The type specimens of the two other species described in the same paper as *P. anguilliformis* are also missing (i.e., *Cremnobates altivelis* = *Paraclinus altivelis,* see Rosenblatt and Parr 1967; *Apodichthys univittatus* = *A. flavidus,* see Hubbs 1927, Yatsu 1981, and Eschmeyer 1998), so locating the holotype of *P. anguilliformis* appears improbable.

In some respects, Lockington's description of *P. anguilliformis* is relatively complete, although in others it is not, as the specimen upon which it was based was damaged, "the example is broken across, the branchiostegals are defective, the caudal fin broken, and some fin-rays missing so that the fin formula cannot be accurately given." Two features of the description,

which unfortunately lacks an accompanying illustration, are particularly noteworthy. First, the dorsal fin is reported to contain only spines, with more than 60 being present. Second, the specimen was extremely thin and elongate (as reflected in the specific name), with the greatest depth contained 16 times in the total length. Other important features of the description include: body naked, profile of head continuously convex, jaw extending to posterior margin of eye, lower jaw slightly longer than upper, palate smooth, pelvic fins "two rayed" and very slightly in advance of pectorals, and the color "dark blackish brown, mingled with white upon top, sides and lower part of head. Interorbital area, and top of snout white."

To our knowledge, no species within the Gulf of California fits Lockington's description in all respects. The Gulf species that comes closest, and the impetus for our inquiry into the status of this nominal species, is the chaenopsid *Parastathmonotus sinuscalifornici* Chabanaud 1942 (= *Stathmonotus sinuscalifornici*), which has only spines in the dorsal fin, a convex head profile, no scales, no palatine teeth, jugular pelvics, and a dark morph, which has light areas along the dorsum (Hastings and Springer 1994). However, *S. sinuscalifornici* has only 40 to 46 spines in the dorsal fin, and the body is deeper, the maximum depth being about 10 times in the total length. Also, this species has prominent flap-like supraorbital cirri, which were not mentioned by Lockington. It seems unlikely, therefore, that *S. sinuscalifornici* and *P. anguilliformis* represent the same species.

Other than the Anguilliformes (unlikely candidates as all have only segmented rays in their dorsal fins), the microdesmids are among the few fishes in the Gulf of California that are slender enough to fit Lockington's description. For example, the maximum body depth of *Microdesmus dipus* Günther is contained approximately 17 times in its total length. However, microdesmids have both spines and segmented rays in the dorsal fin, the jaw does not extend posterior to the anterior orbital margin, and the pelvic fin formula is I, 3. It is unlikely that *P. anguilliformis* applies to a microdesmid because Lockington (1881) reported a specimen of *M. dipus* from the Gulf of California in the same paper in which he described *P. anguilliformis.*

Because we are unable to associate *P. anguilliformis* with any Gulf of California species, we, as did Hubbs (1927), believe that the collecting locality is in error. Lockington's (1881) report of collecting *A. flavidus* (as *Apodichthys univittatus*) from La Paz (SE end of the Gulf of California), is clearly erroneous, as the species is known otherwise only from temperate waters: southern California north to Kodiak Island, Alaska (Yatsu 1981). The cruise track of the *Harvest Queen* ranged from San Francisco to the Gulf of California, and Lockington (1881) reported on several species from the outer coast of Baja California, as well as California. Consequently, we compared details of the original description of *P. anguilliformis* with details of possibly similar fishes occurring in the well-known faunas of these two areas.

With respect to the long dorsal fin comprising only spines, several species of stichaeid fishes from coastal North America might be possible candidates for identification as *P. anguilliformis.* Many of these species can be eliminated, however, because they lack pelvic fins, are relatively deep bodied, or occur only north of California. Of the remaining stichaeids, *Plectrobranchus evides* Gilbert, 1890, and *Poroclinus rothrocki* Bean, 1890, have 54–57 and 57–67 dorsal-fin spines, respectively, but both have more pelvic-fin elements (I, 3) and relatively deeper bodies (approximately 10 times in TL) than *P. anguilliformis. Lumpenus sagitta* Wilimovsky, 1956, with 64–72 dorsal-fin spines, is slender (depth about 16 times in total length), but has 4 or 5 pelvic-fin elements and is known only from Humbolt Bay northward (Miller and Lea

1972), and thus was probably not encountered by the *Harvest Queen.*

In many respects the original description of *P. anguilliformis* most closely resembles that of a species of *Pholis* (Pholidae). Pholids are relatively slender (although they generally have deeper bodies than described for *P. anguilliformis*) and have a convex head profile, only spines in the dorsal fin, a small pelvic fin with two or three elements, and often have light pigment on the nape and interorbit. If Lockington's description of the body depth is erroneous, his description could well apply to *Pholis ornata* (Girard, 1854), whose type locality is San Francisco Bay (Springer and Anderson 1997).

Pholidichthys anguilliformis is a relatively obscure, old, and problematic name for a fish species for which no primary type material is available. As such, the name of any more recently described fish species that is currently considered a valid senior synonym could be invalidated, should a neotype identifiable as such a valid species be designated for *P. anguilliformis.* To remove this possibility, we designate the holotype of *Gunnellus ornatus* Girard, 1854 (= *Pholis ornata*), USNM 490 (Presidio on the Bay of San Francisco, California), as neotype of *Pholidichthys anguilliformis* Lockington, 1881.

Consequently, *Pholidichthys anguilliformis* Lockington, 1881, becomes a junior objective synonym of *Gunnellus ornatus* Girard, 1854.

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